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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,945	05/22/2006	Koji Hamaoka	MAT-8845US	6938
52473	7590	12/12/2007		
RATNERPRESTIA P.O. BOX 980 VALLEY FORGE, PA 19482			EXAMINER MCCLLOUD, RENATA D	
			ART UNIT	PAPER NUMBER
			2837	
			MAIL DATE	DELIVERY MODE
			12/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,945

Applicant(s)

HAMAOKA ET AL.

Examiner

Renata McCloud

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/22/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figure 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "timer", the "refrigerating and air conditioning system", the "compressor in a refrigerating and air-conditioning system", and the "blower" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3,5-7,9-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al (US6984948) in view of Matsuo et al (US 6906491).

Claims 1,5: Nakata et al teach a brushless DC motor driver/method comprising: a rectifier circuit (1) for rectifying an AC voltage input from an AC power source (5), the rectifier circuit (1) being configured with a diode bridge circuit; a capacitor (fig. 14:16) coupled between output terminals of the rectifier circuit (1); an inverter (2) coupled to the rectifier circuit (1); a position detector for detecting a rotor position of the brushes DC motor based on one of a back electromotive force of the brushless DC motor driven by the inverter and a motor current (col. 7:65-8:9); a position estimator for estimating the rotor position when it is not detected by the position detector (col. 7:65-8:9); and a controller for operating the inverter by switching between an output signal from the position detector and an output signal from the position estimator (col. 7:65-8:9). They do not teach estimating the rotor position by a position estimator when the rotor position is not detectable by the position detector.

Matsuo et al teach an inverter (5), a brushless motor (2) ; detecting a rotor position of the brushless DC motor by a position detector (3) based on one of a back electromotive force of the brushless DC motor and a motor current; estimating the rotor position by a position estimator when the rotor position is not detected by a position detector (col. 9:63-101.); and controlling the inverter (5) by a controller based on one of the rotor position detected by the position detector (3) and the rotor position estimated by the position estimator (col.2:57-3:20; col. 9:63-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus/method taught by Nakata et al to sense the position as taught by Matsuo et al in order to detect the position of the rotor during an abnormality.

Claims 2,7: Nakata et al teach the capacitor has a capacitance that a ripple content in an output voltage of the rectifier circuit becomes not less than 90% in an output range for practical use in driving the brushless DC motor (col. 20:1-6, the ripple similar to when the capacitor is not provided would be 100%).

Claim 3: Matsuo et al teach a predetermined time is specified based on a detection time when the rotor position is detectable by the position detector (col. 4:35-5:15), and the rotor position is estimated on a precondition that the position shifts after the predetermined time when the rotor position is not detectable by the position detector (col. 5:50-6:9).

Claim 6: Nakata et al teach the inverter (2) is configured with six switching elements in a three-phase bridge connection (the 6 transistors of 2).

Claim 9: Nakata et al teach a voltage across the capacitor is detected (col. 16:54-17:5), and an output from the position estimator is used for operating the inverter when the detected voltage is lower than a predetermined voltage (col. 16:16-27, 16:5-17:5, col. 19:39-48).

Claim 10: Nakata et al teach the brushless DC motor drives a compressor in a refrigerating and air conditioning system (col. 16:41-50).

Claim 11: Nakata et al teach the brushless DC motor drives an air blower for feeding air (col. 16:41-50).

5. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al (US6984948) in view of Matsuo et al (US 6906491) as applied to claim 1 above and further in view of Sepe et al.

Claim 4: Nakata et al and Matsuo et al teach the limitations of claims 1. Referring to claim 4, they do not teach the rotor position is judged undetectable by the position detector when an output voltage of the rectifier circuit is lower than a predetermined voltage. Sepe et al teach the rotor position is judged undetectable by the position detector when an output voltage of the rectifier circuit is lower than a predetermined voltage (Figs. 3-4; pgs 159-160: IV (A) operating regions, speed below 960rpm, speed proportional to voltage). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Nakata et al and Matsuo et al to judge the position detector as taught by Sepe et al in order to determine when to switch to sensorless control.

6. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al (US6984948) in view of Matsuo et al (US 6906491) as applied to claim 5 above and further in view of Kushihara et al (US 6774593).

Claim 8: Nakata et al and Matsuo et al teach the limitations of claim 5. Referring to claim 8, they do not the position estimator has a timer, the position estimator specifying a predetermined time based on a detection time when the rotor position is detectable by the

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position detector, and determining an estimated rotor position using the timer when the rotor position is not detectable by the position detector. Kushihara et al teach a position estimator (11) has a timer, the position estimator specifying a predetermined time based on a detection time when the rotor position is detectable by the position detector (10), and determining an estimated rotor position using the timer when the rotor position is not detectable by the position detector (col. 3:25-52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Nakata et al and Matsuo et al to have a timer as taught by Kushihara et al in order to determine the position of the rotor.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 5:30 am - 2pm.

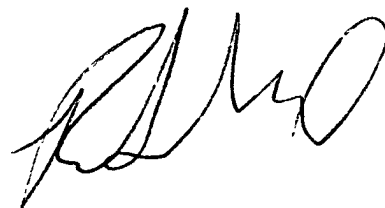
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-2800 ext. 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Renata McCloud
Examiner
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rdm

A handwritten signature in black ink, appearing to read 'RM40', is located in the lower right quadrant of the page.